

REMARKS

Claims 1-34 are pending in the application. The Examiner's reconsideration of objections and rejections set forth in the Office Action is respectfully requested based on the above amendments and following remarks.

Allowable Subject Matter

Applicants gratefully acknowledge Examiner's indication that claims 10-28 are allowed and that claims 30 and 33 would be allowable if rewritten as suggested in the Office Action.

Claim Objections

Claim 2 was objected to for the reasons set forth on page 2 of the Office Action. Applicants respectfully traverse the objection on the ground that claim 2 does not recite the purported informality cited by the Examiner. Accordingly, withdrawal of the objection is requested.

Claim Rejections – 35 U.S.C. § 102

Claims 1 and 2 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Publication No. 2002/0094593 to Chiou et al. Although Applicants respectfully disagree with the rejection, claim 1 has been amended to include the subject matter of canceled claim 3. Examiner acknowledges (on page 3, paragraph c) that Chiou does not suggest the subject matter of claim 3. As such, claim 1 is patentably distinct and not anticipated by Chiou.

Claim 1 is essentially claim 3 written in independent form. Claim 3 was rejected as being obvious on the ground that Chiou discloses an oxynitride layer having a thickness of 620 angstroms, and that it would have been an obvious matter of design choice to merely change the thickness of the layer (see, page 3, paragraph c). Applicants respectfully disagree with such

conclusion.

To begin, Chiou discloses a method of forming an ARC (antireflective coating) of SION using a method that enable adjusting the optical properties of the ARC layer (e.g., adjusting the extinction coefficient, k , of the dielectric ARC layer while holding the reflective index, n , at a constant value) (see, e.g., Abstract; Page 2, Para [0029]). For purposes of forming ARC layers, the Chiou method requires a relatively thick ARC layer.

On the other hand, the claimed inventions provide methods for forming oxynitride dielectric layers that can be scaled down in the sub 20 angstrom thickness ranges, while providing sufficient properties such as low gate leakage, high dielectric constant, low power dissipation, etc. Indeed, as explained in Applicants specification (e.g., page 1, line 21- page 2, line 5), increased device performance is obtained by reduction in gate dielectric thickness. However, reduced oxynitride dielectric thickness is limited by the increased leakage current that occurs when the thickness is scaled down. The claimed inventions enable formation of thin oxynitride dielectric layers having reduced current leakage and power dissipation.

As such, Examiner cannot reasonably contend that based on Chiou's disclosure of a thick (620 angstrom) oxynitride layer, it is a matter of design choice for the claimed inventions to change the size of the oxynitride layer to a thickness in a range of about 12 to about 24 angstroms, as essentially claimed in claim 1. Therefore, it is respectfully submitted that Chiou neither anticipates, nor renders obvious, the invention of claim 1.

Claim Rejections – 35 U.S.C. § 103

Claims 3-9, 29, 31-32 and 34 stand rejected under 35 U.S.C. § 103 as being unpatentable over Chiou in view of U.S. Patent No. 6,420,739 to Yokoi, for the reasons set forth on pages 2-3

of the Office Action.

To begin, claim 1 is patentable and nonobvious over the Chiou and Yokoi, singularly and in combination, for the reasons stated above. It is to be further noted that Yokoi discloses a silicon nitride dielectric layer, but does not disclose an oxynitride layer, much less an oxynitride layer having the claimed range of thicknesses as recited in claim 1. Further, claims 4-9 are patentable and non-obvious over the combination of Chiou and Yokoi at least by virtue of their dependence from claim 1.

Furthermore, claim 29 has been amended to include the subject matter of canceled claim 30. As such, the rejection of claim 29 is moot and claim 29 and all claims that depend there from are believed to be in condition for allowance. Further, claim 33 has been rewritten in independent form and as such, is believed to be in condition for allowance.

Accordingly, for the above reasons, withdrawal of the obviousness rejections is respectfully requested.

Respectfully submitted,



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